



## CHROMOPHARE<sup>®</sup> Surgical and Examination Light

### Pre-Installation Information



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## Introduction

The Berchtold CHROMOPHARE® C-570, C-571, C-572, C-450, and C-452 represent a modern generation of surgical lights, featuring many technological advances.

They are characterized by state of the art electronics, a computer designed polygon reflector, and cardanic suspension of the light head.

This includes the following benefits:

- Freedom from shadows in the operating field.
- High luminous power which generates the brilliance and high color temperature simulating noontime brightness on a cloudless day.
- Easier hygiene due to smooth styling of the light body – the absence of control knobs on the outer surface, the use of metal and safety glass, and the sealed light head.
- Larger range of height adjustment; greater mobility of the light.
- Easy replacement of defective halogen or Xenophot bulbs by OR staff.
- Cool, single bulb technology, with automatic, instant –on back-up bulb.

The construction of mechanics and control functions will be described in detail on the following pages. Diagrams and electrical specifications accompany the descriptions.

Installation and mounting instruction manuals are included to aid in the mounting and electrical installation.



## Technical Data

<b>Technical Specifications</b>	<b>C571</b>	<b>C572</b>	<b>C450</b>	<b>C452</b>
Illuminance at 1 m distance at color temperature 3600 K <sup>(1)</sup> color temperature 4500 K <sup>(1)</sup>	120,000 lux 100,000 lux	165,000 lux 135,000 lux	70,000 lux 55,000 lux	105,000 lux 85,000 lux
Field diameter continuously adjustable	18 -28 cm 7.1 in. -11.0 in.	17 - 24 cm 6.7 - 9.4 in.	16 - 22 cm 6.5 - 8.7 in.	15 - 21 cm 5.9 - 8.3 in.
Power Requirements	110/120/130 V AC 250 VA		110/120/130 V AC 140 VA	
Brightness adjustment	Continuous from approx. 50% - 100%		Continuous from approx. 50% - 100% (CFWP only)	
Power consumption main lamp/reserve lamp	150 W / 24 V, Order No. CZ-908-24		110 W / 22.8 V, Order No.CZ-905-2204	
Diameter light head	570 mm / 22.4 in.		450 mm / 17.7 in.	
Polygon reflector	500 mm / 19.7 in.		410 mm / 16.1 in.	
Maximum working range	from 70 cm to 200 cm distance		from 60 cm to 200 cm distance	
Average service life main lamp/reserve lamp	approx 1,000 operating hours			
Swivel radius ceiling light	161/176/198.5 cm / 5.3/5.8/6.5 feet			
Swivel radius wall light	168 cm / 5.5 feet			
Height adjustment of the light head	119 cm / 3.9 feet			
Color rendition index (CRI)	90-94 <sup>(2)</sup>			
Absorption of infrared radiation	99%			
Unchanging light field diameter without refocusing	constant up to 500 mm height difference			

Finish RAL 7035

Light field is adjusted by rotating the sterilizable hand grip

- (1)  $\pm 10\%$   
 (2) Filter system optional



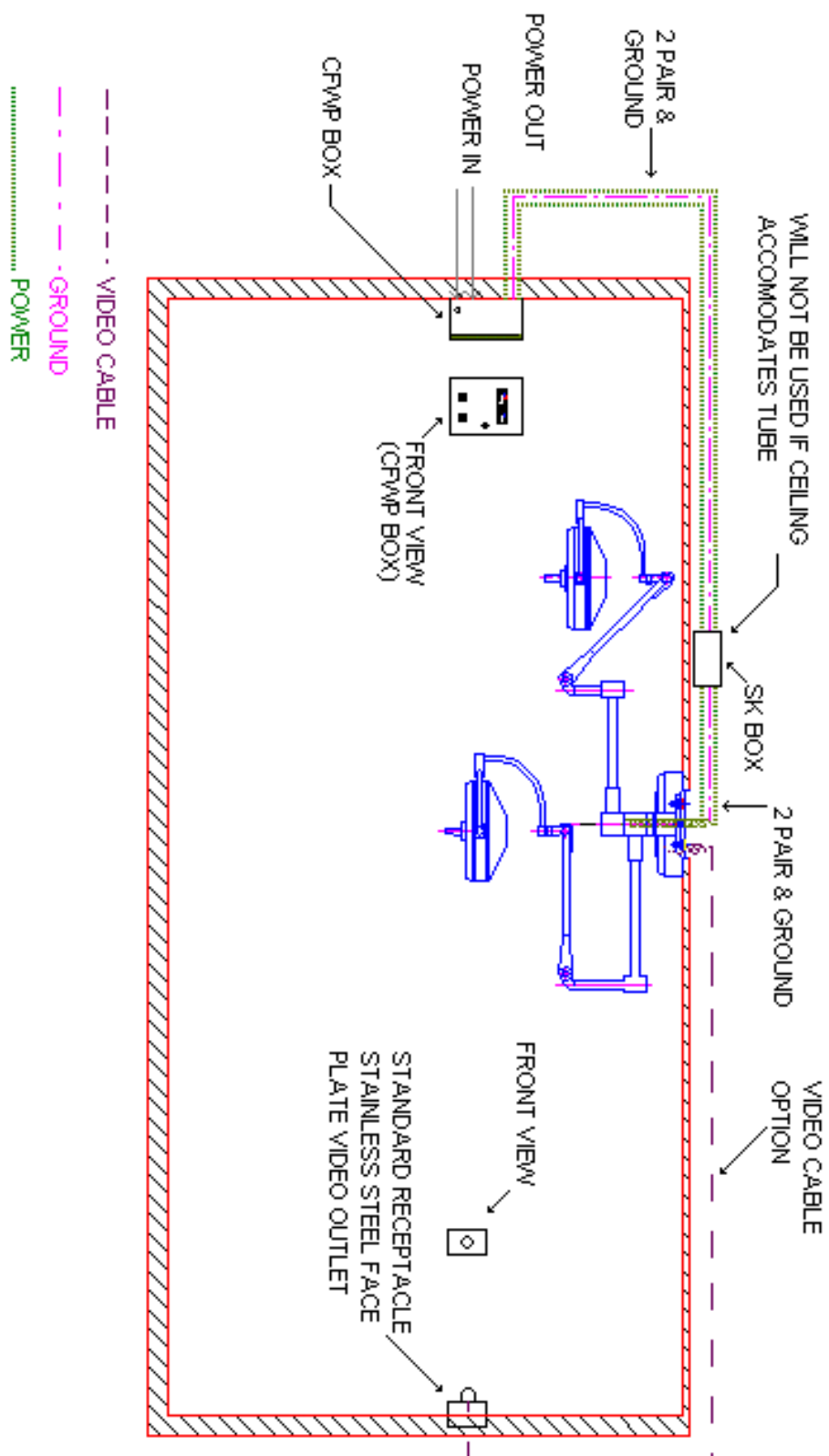


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## Hospital Responsibilities

The hospital, or the hospital's contractor, must complete the following items before Berchtold's installation technicians arrive:

1. CFWP box (wall control unit) installed either by recessing in the wall, or surface mounting it.  
**SEE PAGE 7**
  2. SK box (contains transformers; used with low ceilings) installed either in the ceiling, or in an area accessible to the technicians.  
**SEE PAGE 8**
  3. All conduit installed and all necessary wires run. Make all connections in CFWP and SK box. Conduit from SK box needs to have 18 inches of flexible conduit and wire hanging out of ceiling at mounting plate.
  4. Superstructure must be complete, and tested to withstand the maximum torque of the light.
  5. Light mounting plate must be installed to the superstructure making sure that the plate is flush with the finished ceiling.
  6. All painting must be complete with finished flooring installed.
- \* SEE PAGES 7-8





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## Wall Mounted Intensity Control Box

Berchtold's electronic intensity controls consist of two separate entities – a wall control box containing electronic circuits to vary the voltage to the transformers which Berchtold Corporation refers to as a CFWP box and a “SK” box containing one to three step down transformers that power the lights.

### CFWP CONTROL BOX

This control box has space to house electronics necessary for the operation of up to three lights. Since two lights are the norm, this is what will be discussed. This box may be installed on the surface of the wall or it may be recessed. A trim ring is supplied to assist the installer when recessing is desired. The front of the box contains two 4-amp on/off circuit breaker switches, which light up when in the ON position and two knobs for controlling the intensity of the lights. To gain access to wire the electronics, loosen screws in each corner and allow the front door to hinge at the bottom. The only part of the interior that an installer needs to be concerned with are the small wiring blocks located at the top of each circuit board. Even if there are three circuit boards, the factory has wired them together so that only one power connection is necessary to power all of the lights. Close examination of the wiring blocks will show from left to right, two connections marker L1 and L2, two that have the factory installed “jumper” wires and two with a schematic symbol of a transformer. The installer need only connect the power to L1 and L2 and run two pairs of wires from the terminals with the “symbol” of a transformer to one of the two ceiling mounted transformers in accordance with the installation instructions. **WARNING: ALWAYS RUN A GROUND WIRE.**

If the transformers are mounted on the flange of the ceiling tube, which also holds the light, the installer need only connect the “transformers” wires from the CFWP box to the input side of the fused junction block. The rest of the wiring on this particular installation was accomplished at the factory.

SEE DRAWINGS FOR **CFWP BOX**, Pages 17-19



## “SK” Box Containing Transformers

If the transformers are **NOT** installed on the ceiling tube, a SK box containing the transformers must be installed by the installer. This type of installation is always used if the ceiling height does not meet Berchtold Corporation's specifications. Your sales consultant will tell you in advance which installation your hospital requires. If the lights are being installed in a new construction atmosphere, the SK box may be installed above the ceiling near an access hatch, or in an electrical closet if the closet is reasonably near the surgical suite. If the installation is in a suite where only the light is to be replaced, the hospital engineering department must decide what location would be good for them. Either of the locations mentioned above may be used or in a case where space and access is limited, this box may be surface mounted in the surgery suite itself. The transformers in the SK box are factory wired and are attached to a removable plate. This allows the installer to remove the transformers to make installation of the box easier. Inside the box, the installer will find two electrical connection blocks – one large block which is fused and one smaller block which is not fused. The wires coming from the CFWP box will hook to the large fused connections. This is the input side of the transformers. The output side of the transformers must be connected to the light heads by connecting two pairs of wires from the smaller junction block (not fused) and running them to the factory mounted wiring block positioned on the flange of the ceiling tube. The factory has pre-wired the light heads.

The basic theory of the intensity control consists of controlling the line voltage input to the step down transformers, which in turn varies the voltage to the bulbs, used in the light heads. It is the installer's option as to where he/she mounts the CFWP box or the SK box if used. The only requirement that the manufacturer has is that a minimum of 14 AWG wire be used and if the SK box is mounted an unusual distance from the light, the installer must refer to the wire size tables of the electrical code book to see if 12 AWG wire should be used to carry the necessary 26-28 VAC at 7.2 amps from the SK box to the light junction block.

SEE DRAWINGS FOR **SK BOX**, Pages 20-22





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## Pre-Wiring Instructions

### I. PRE-WIRING BERCHTOLD CHROMOPHARE LIGHTS

All Chromophare “C” series lights (regardless of the quantity of light heads) require a single 120-volt supply. This supply should be a 3-wire supply consisting of one HOT, one NEUTRAL, and one GROUND wire. This wire size should be at least 14 AWG, 600 V to meet UL standards.

These wires are provided by the hospital, and should be hanging at least 12 inches through the Berchtold mounting ring prior to the Berchtold Service Representative arriving for installation.

### II. PRE-WIRING BERCHTOLD CFWP BOXES (See Pages 6 & 16-19)

- A. The CFWP box must be mounted in or on the wall in a manner that will provide accessibility to the light controls by the operating room staff.
- B. A single 120-volt supply as mentioned above should be provided to the CFWP box.
- C. A 3-wire supply of the same specifications mentioned above should be run from the CFWP box to the mounting ring for the first light head, and an additional two wires run for each additional light head. These wires again should be hanging through the Berchtold mounting ring prior to installation.

### III. PRE-WIRING BERCHTOLD CFWP WITH SK BOX (See Pages 6 & 20-22)

- A. The CFWP box must be mounted in or on the wall in a manner that will provide accessibility to the light controls by the operating room staff.
- B. A single 120-volt supply as mentioned above should be provided to the CFWP box.
- C. A 3-wire supply of the same specifications mentioned above should be run from the CFWP box to the SK Box and from the SK Box to the mounting ring for the first light head, and an additional two wires run for each additional light head. These wires again should be hanging through the Berchtold mounting ring prior to installation.



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## Superstructure Information

### *IMPORTANT!*

**\*\*CHECK WITH YOUR LOCAL CONSTRUCTION ENGINEERING AGENCY TO MEET LOCAL OR STATE CODES. HOSPITAL (AND / OR) CONTRACTOR HAS RESPONSIBILITY FOR SUPERSTRUCTURE STRENGTH AND STABILITY. \*\***



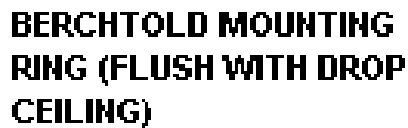
## Weight and Momentum

Model Number	Total Weight for Design (lbs)	Moment (ft. lbs)
C572/224	273	1208
C572/C572/224	341	1475
C572/C452/224	332	1418
C571/224	273	1208
C571/C571/224	341	1475
C571/C450/224	332	1418
C452/224	264	1151
C452/C452/224	322	1363
C450/224	264	1151
C450/C450/224	322	1363
C572	98	439
C572/C572	168	610
C572/C452	159	546
C572/C572/C572	235	877
C572/C572/C452	226	814
C572/C452/C452	217	757
C571	98	439
C571/C571	168	610
C571/C450	159	546
C571/C571/C571	235	877
C571/C571/C450	226	814
C571/C450/C450	217	757

**Weight and Momentum (Continued)**

<b>Model Number</b>	<b>Total Weight for Design (lbs)</b>	<b>Moment (ft. lbs)</b>
C452	88	261
C452/C452	149	490
C452/C452/C452	208	702
C450	88	261
C450/C450	149	490
C450/C450/C450	208	702

Check with your local construction engineering agency to meet local or state codes.

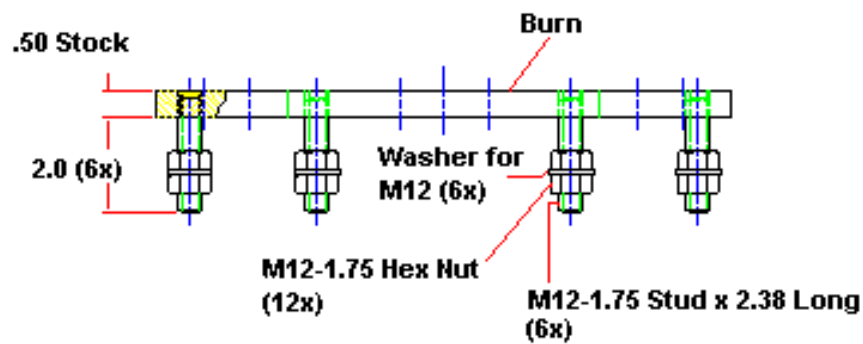
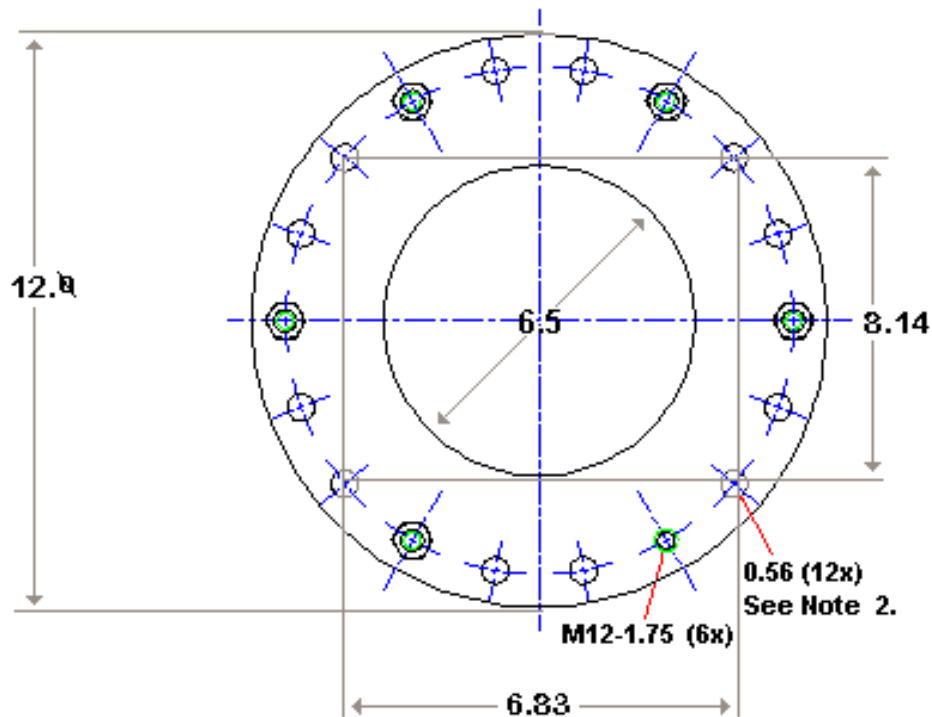




# Mounting Ring CB-510-3304

## NOTES:

1. Material: A-36 Steel Plate.
2. M12-1.75 and 0.56 holes all equally spaced on 010.625 B.C.

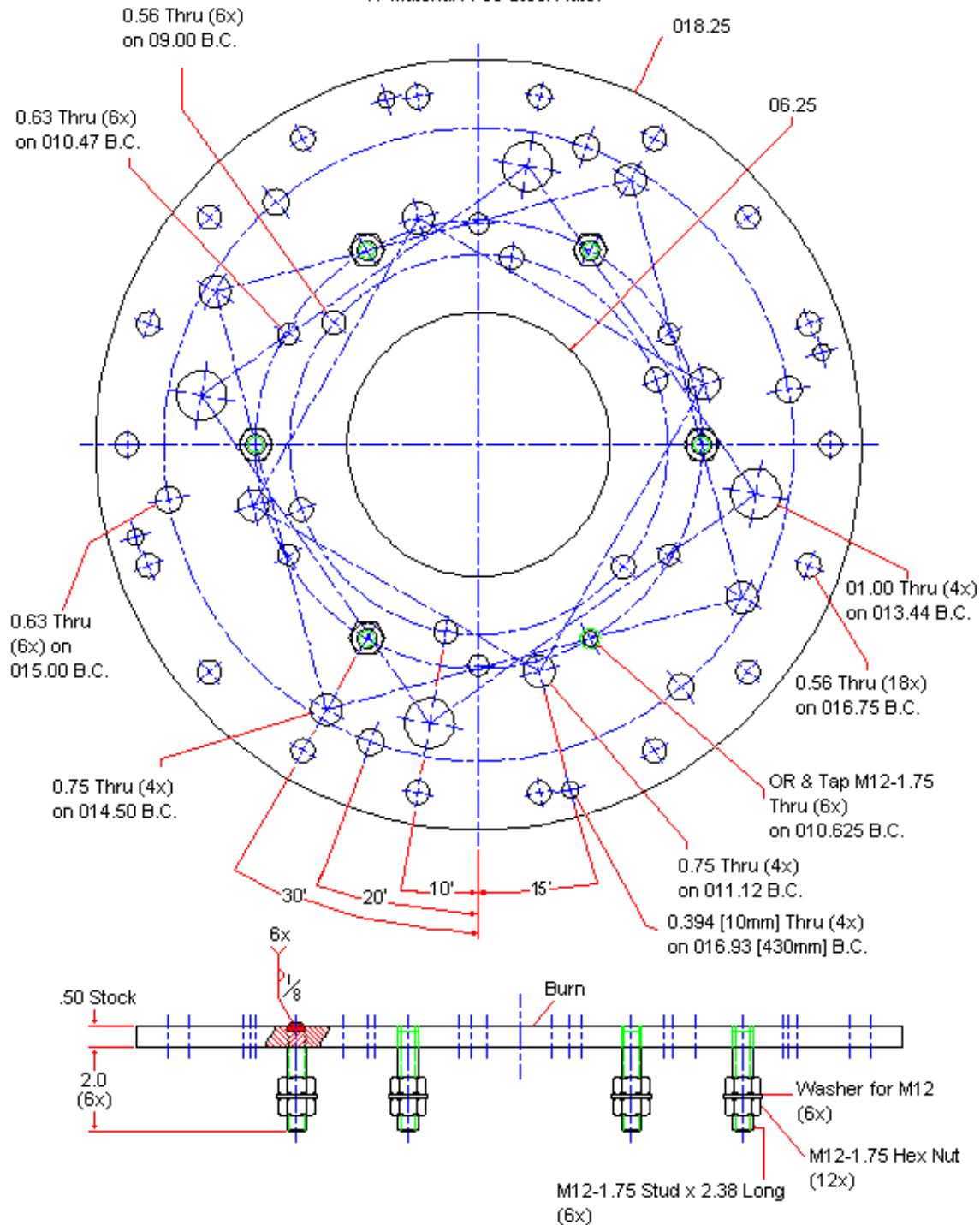




# Mounting Ring CB-509-4504

## NOTES:

1. Material A-36 Steel Plate.



## **Wallbox – Installation**

A Wallbox is required for the CFWP Version of the Chromophare C-450, C-452, C-570 and C-571 Surgical Light System.

In the CFWP version, controls reduce the supply line voltage by providing intensity settings within the range of 20-24 volts. The 4-amp on/off circuit breaker switches illuminate in the ON position.

Berchtold furnishes all components to obtain a complete working unit, ready for installation and connection. Units can be used:

- A. For surface mounting on finished wall.
- B. For recessing into a finished wall; one Trim ring supplied.

### **Mounting Procedure:**

- A. For surface mounting:

Use four anchor pegs to mount the wallbox on the concrete wall, 53 inches above the floor.

- B. Recessed Mounting:

Build frame 53 inches above the floor.

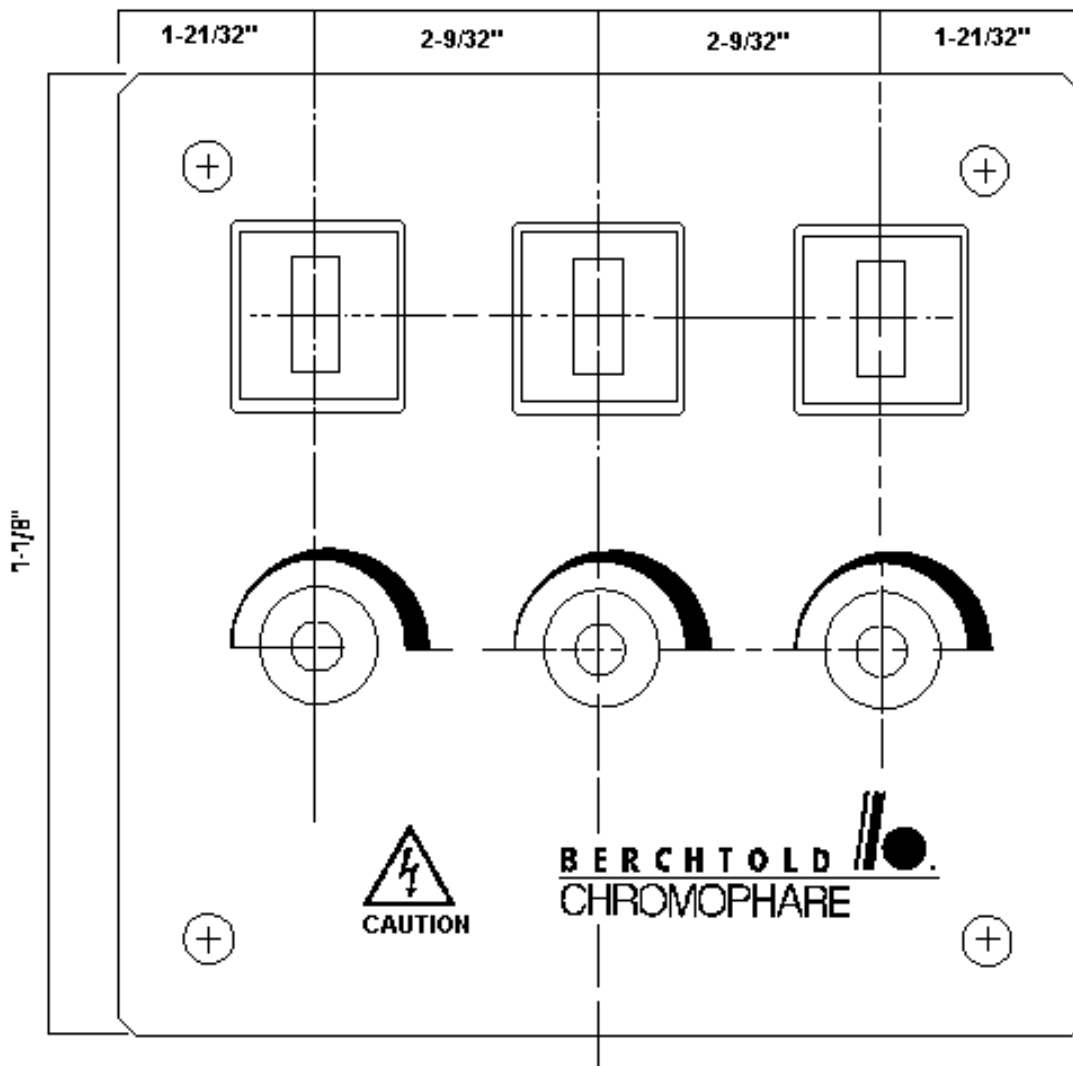
### **NOTE:**

1. THE ELECTRICAL CONNECTION BETWEEN THE WALLBOX AND THE LIGHT FIXTURE IS WIRED BY HOSPITAL OR CONTRACTOR PERSONNEL.
2. THE DISPLAYED DIMENSIONS FOR THE TRIPLE VARIABLE INTENSITY CONTROL ARE IDENTICAL FOR A SINGLE OR DUAL CONTROL BOX.
3. YOU NEED TO PROVIDE 115/120 VOLTS, 50/60 HZ SINGLE-PHASE, 3-WIRE SERVICE. THE WALLBOX MUST BE GROUNDED.
4. YOU NEED TO PROVIDE TWO WIRES AND A GROUNDING WIRE FOR EACH LIGHT HEAD. FOR A DUAL LIGHT, YOU NEED FOUR WIRES AND A GROUND. FOR A TRIPLE LIGHT, YOU NEED SIX WIRES AND A GROUND.



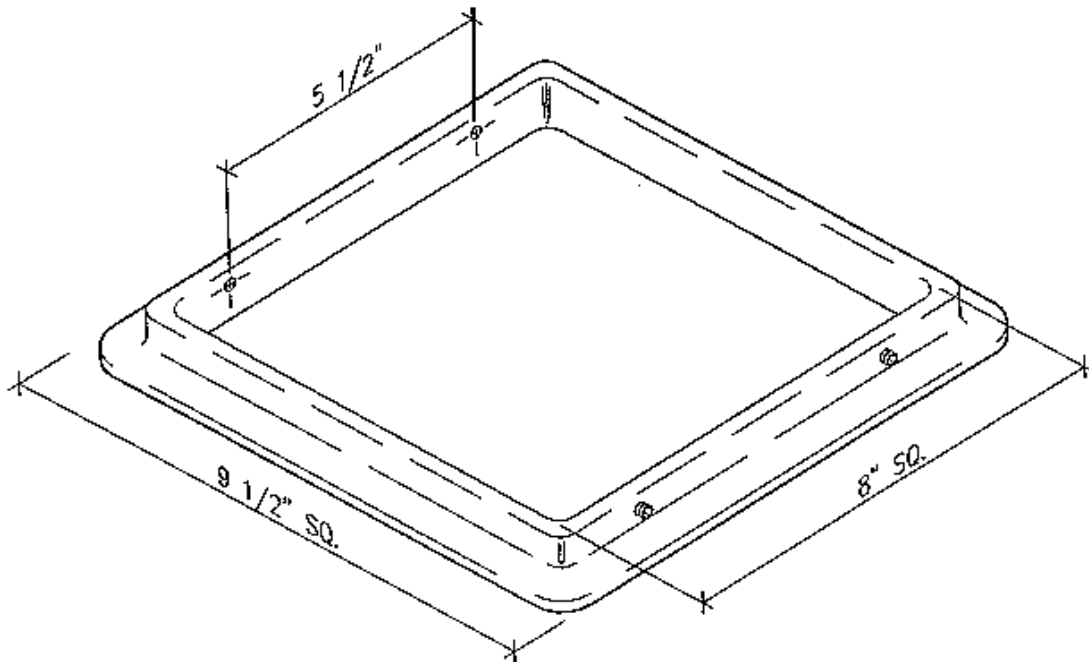
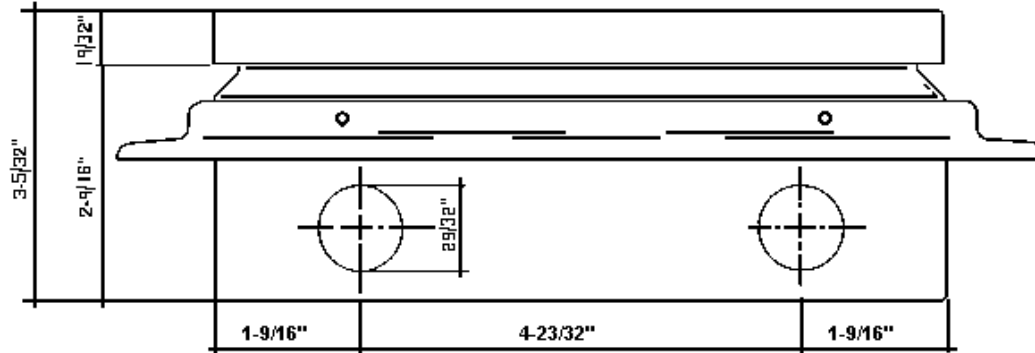


# Triple Control Wallbox With Intensity Control



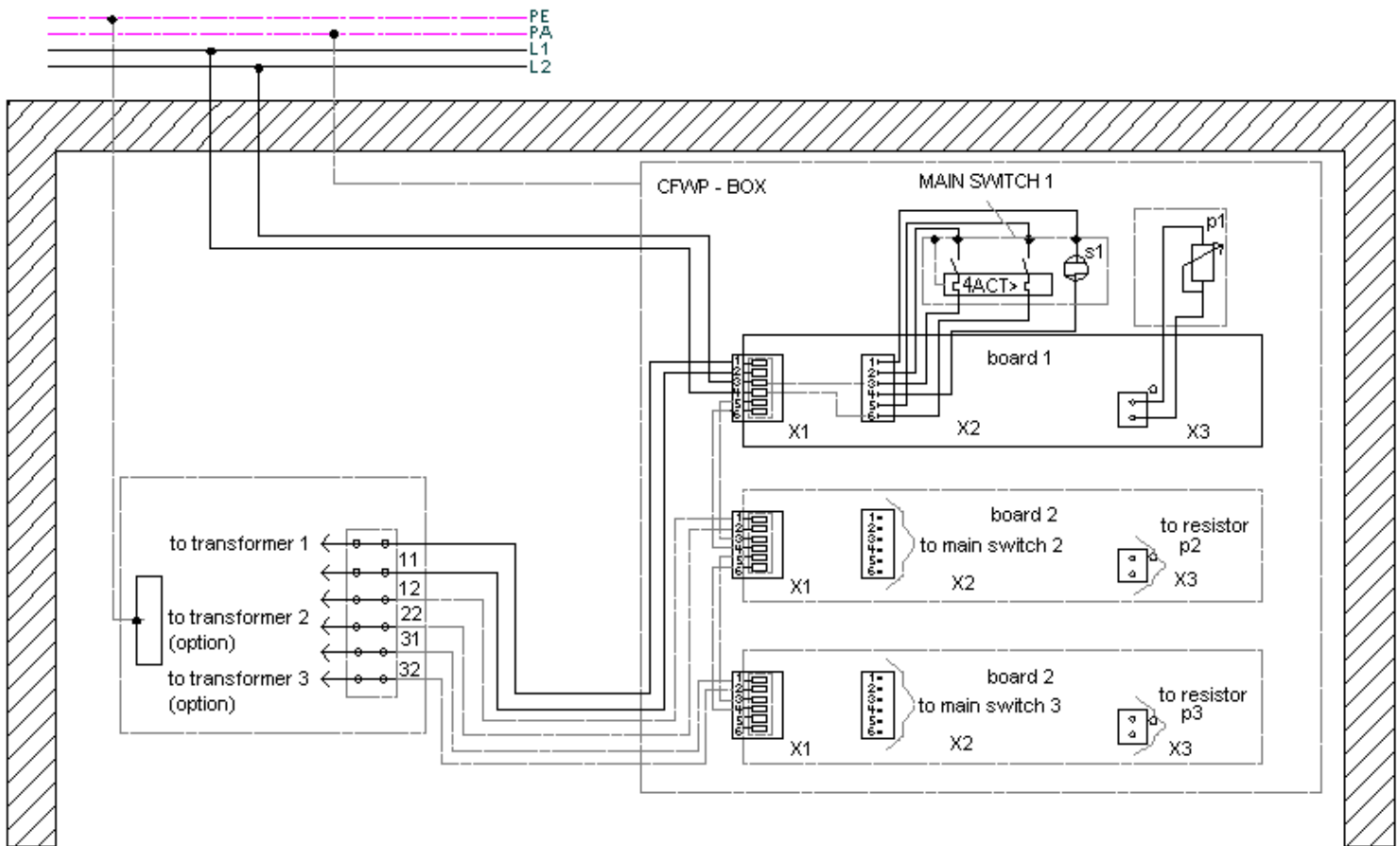


## Triple Control Wallbox (Continued) With Trim Ring





# **Electrical Diagram for Berchtold CHROMOPHARE OR- Light Model C570 & 571 CFWP Single, Double, and Triple Combination**



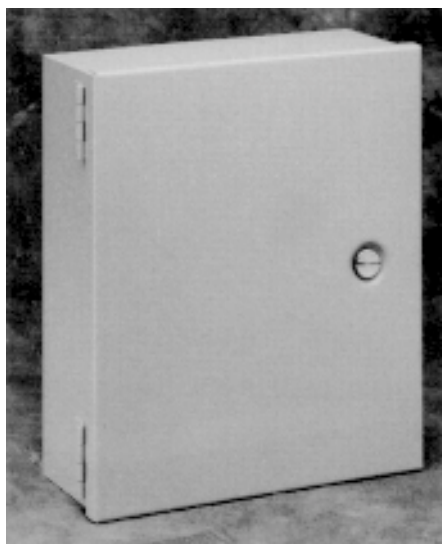
Electrical diagram for Berchtold CHROMOPHARE OR – Light Model C-450, C-452, C570, and C-571 CFWP single, double, and triple combination.  
Transformers mounted at the ceiling tube of the OR – Light.  
Light controlled from the wall-box.

This enclosure should be securely mounted above ceiling near light fixture. The location of enclosure must have some means of accessibility.

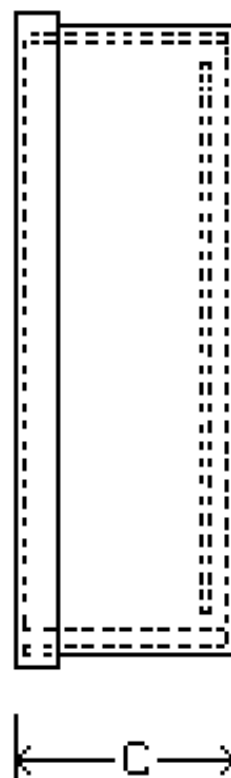
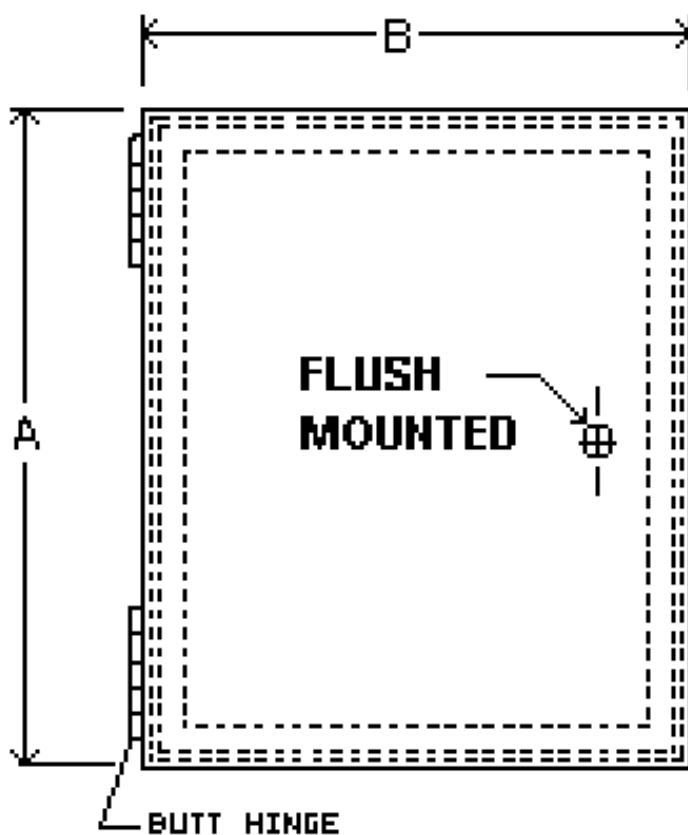




## SK Box Enclosure



Enclosure Size AxBxC	Panel Size DxE
12.00 x12.00x6.00 (305x305x152)	10.25x10.25 (260x260)





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## *NOTES*



**Safe • Innovative • Berchtold**

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